KROHNE

Operating Instructions

OPTISWITCH 3000 C
with two-wire output

- Variable area flowmeters
- Vortex flowmeters
- Flow controllers
- Electromagnetic flowmeters
- Ultrasonic flowmeters
- Mass flowmeters
- **Level measuring instruments**
- Communications engineering
- Engineering systems & solutions
- Switches, counters, displays and recorders
- Heat metering
- Pressure and temperature

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30061-EN-060830

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Supplementary operating instructions manuals

Information:
OPTISWITCH 3000 C is available in different versions. Depending on the selected version, supplementary operating instructions manuals may also come with the shipment. The supplementary operating instructions manuals are listed in section *"Product description*.

Operating instructions manuals for accessories and replacement parts

Tip:
To ensure reliable setup and operation of your OPTISWITCH 3000 C, we offer accessories and replacement parts. The associated documents are:

- Operating instructions manual "*Oscillator*"

1 About this document

1.1 Function

This operating instructions manual has all the information you need for quick setup and safe operation. Please read this manual before you start setup.

1.2 Target group

This operating instructions manual is directed to trained, qualified personnel. The contents of this manual should be made available to these personnel and put into practice by them.

1.3 Symbolism used

Information, tip, note
This symbol indicates helpful additional information.

Caution: If this warning is ignored, faults or malfunctions can result.
Warning: If this warning is ignored, injury to persons and/or serious damage to the instrument can result.
Danger: If this warning is ignored, serious injury to persons and/or destruction of the instrument can result.

Ex applications
This symbol indicates special instructions for Ex applications.

- **List**
  The dot set in front indicates a list with no implied sequence.

→ **Action**
This arrow indicates a single action.

1 **Sequence**
Numbers set in front indicate successive steps in a procedure.

2 For your safety

2.1 Authorised personnel

All operations described in this operating instructions manual must be carried out only by trained specialist personnel authorised by the operator. For safety and warranty reasons, any internal work on the instruments must be carried out only by personnel authorised by the manufacturer.

2.2 Appropriate use

OPTISWITCH 3000 C is a sensor for level detection.

Detailed information on the application range of OPTISWITCH 3000 C is available in chapter "*Product description*".

2.3 Warning about misuse

Inappropriate or incorrect use of the instrument can give rise to application-specific hazards, e.g. vessel overfill or damage to system components through incorrect mounting or adjustment.

2.4 General safety instructions

OPTISWITCH 3000 C is a high-tech instrument requiring the strict observance of standard regulations and guidelines. The user must take note of the safety instructions in this operating instructions manual, the country-specific installation standards (e.g. the VDE regulations in Germany) as well as all prevailing safety regulations and accident prevention rules.

2.5 CE conformity

OPTISWITCH 3000 C is in CE conformity with EMC (89/336/EWG), fulfils NAMUR recommendation NE 21 and is in CE conformity with LVD (73/23/EWG).

Conformity has been judged according to the following standards:

- EMC:
  - Emission EN 61326: 1997 (class B)
  - Susceptibility EN 61326: 1997/A1:1998
- LVD: EN 61010-1: 2001

3 Product description

3.1 Configuration

Scope of delivery

The scope of delivery encompasses:

- OPTISWITCH 3000 C level sensor
- Documentation
  - this operating instructions manual
  - Supplementary instructions manual "*Plug connector for level sensors*" (optional)

Components

OPTISWITCH 3000 C consists of the following components:

- Housing cover
- Housing with electronics
- process fitting with tuning fork

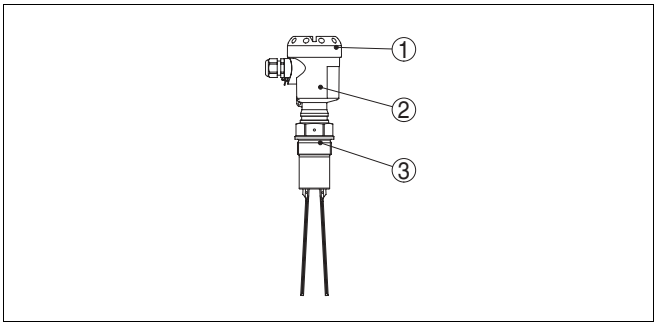

Fig. 1: OPTISWITCH 3000 C with plastic housing
1 Housing cover
2 Housing with electronics
3 Process fitting

3.2 Principle of operation

Area of application

OPTISWITCH 3000 C is a level sensor with tuning fork for level detection.

It is designed for industrial use in all areas of process technology and is preferably used for bulk solids.

Typical applications are overfill and dry run protection. Thanks to its simple and robust measuring system, OPTISWITCH 3000 C is virtually unaffected by the chemical and physical properties of the bulk solid.

It functions even when exposed to strong external vibration or changing products.

Fault monitoring
The electronics of OPTISWITCH 3000 C continuously monitors the following criteria:

- Correct vibrating frequency
- Line break to the piezo drive

If one of these faults is detected, the electronics signals this via a defined current to the signal conditioning instrument. The connection cable to the vibrating element is also monitored.

Physical principle

The tuning fork is piezoelectrically energised and vibrates at its mechanical resonance frequency of approx. 150 Hz. When the tuning fork is submerged in the product, the vibration amplitude changes. This change is detected by the integrated oscillator and converted into a switching command.

Power supply

Depending on your requirements, OPTISWITCH 3000 C with two-wire electronics can be connected to different signal conditioning instruments. Compatible signal conditioning instruments are listed under "*Technical data*".

The exact range of the power supply is stated in the "*Technical data*" in the "*Supplement*".

3.3 Operation

OPTISWITCH 3000 C can detect products with a density >0.08 g/cm^3 (>0.003 lbs/in^3).

On the electronics module you will find the following indicating and adjustment elements:

- signal lamp for indication of the switching condition (green/red)
- mode switch for selection of the output current

3.4 Storage and transport

Packaging

Your instrument was protected by packaging during transport. Its capacity to handle normal loads during transport is assured by a test according to DIN 55439.

The packaging of standard instruments consists of environment-friendly, recyclable cardboard. In addition, the sensor is provided with a protective cover of cardboard. For special versions PE foam or PE foil is also used. Dispose of the packaging material via specialised recycling companies.

Storage and transport temperature

- Storage and transport temperature see "*Supplement - Technical data - Ambient conditions*"
- Relative humidity 20 … 85 %

4 Mounting

4.1 General instructions

Switching point

In general, OPTISWITCH 3000 C can be mounted in any position. The instrument must be mounted in such a way that the vibrating element is at the height of the requested switching point.

Moisture

Use the recommended cables (see chapter "*Connecting to power supply*") and tighten the cable gland.

You can give your OPTISWITCH 3000 C additional protection against moisture penetration by leading the connection cable downward in front of the cable entry. Rain and condensation water can thus drain off. This applies mainly to mounting outdoors, in areas where moisture is expected (e.g. by cleaning processes) or on cooled or heated vessels.

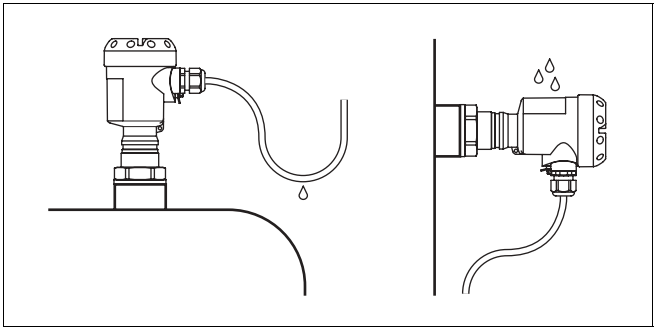

Fig. 2: Measures against moisture penetration

Transport

Do not hold OPTISWITCH 3000 C on the vibrating element. The sensor can be damaged by the weight of the instrument.

Remove the protective cover just before mounting.

Pressure/Vacuum

The process fitting must be sealed if there is gauge or low pressure in the vessel. Before use, check if the seal material is resistant against the measured product and the process temperature.

The max. permissible pressure is stated in the "*Technical data*" in the "*Supplement*" or on the type label of the sensor.

Handling

The vibrating level switch is a measuring instrument and must be treated accordingly. Bending the vibrating element will destroy the instrument.

Warning:
The housing must not be used to screw in the instrument! Applying tightening force on the housing can damage its internal mechanical parts.

To screw in, use the hexagon above the thread.

4.2 Mounting instructions

Socket

The vibrating element should protrude into the vessel to avoid buildup. For that reason, avoid using mounting bosses for flanges and screwed fittings. This applies particularly to use with adhesive products.

Filling opening

Mount the instrument in such a way that the tuning fork does not protrude directly into the filling stream.

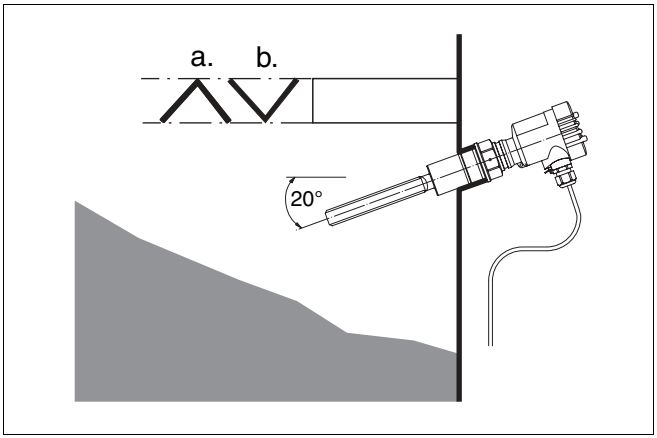

Fig. 3: Horizontal mounting
a Convex mounting
b Concave mounting

If such an installation location should be necessary, mount a suitable protective sheet above or in front of the vibrating element - see illustration a.).

In abrasive solids, mounting according to illustration b. has proven. A spout forms in the concave protective sheet preventing wear of the protective sheet.

Horizontal mounting

To achieve a very precise switching point, you can install OPTISWITCH 3000 C horizontally. However, if the switching point can have a tolerance of a few centimeters, we recommend mounting OPTISWITCH 3000 C approx. 20° inclined to the vessel bottom to avoid buildup.

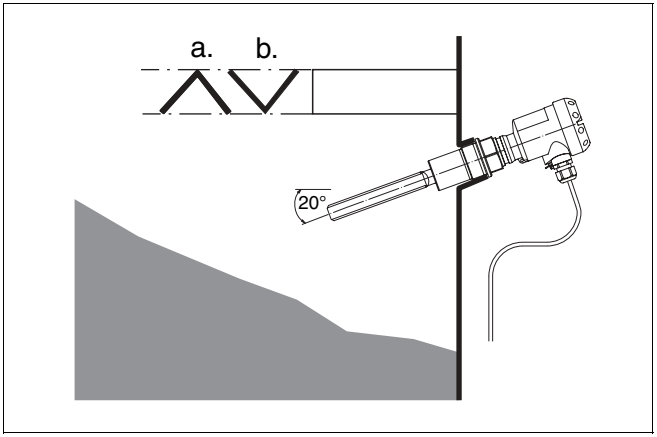

Fig. 4: Horizontal mounting
a Protective sheet
b Concave protective sheet for abrasive solids

Inflowing medium

If OPTISWITCH 3000 C is mounted in the filling stream, unwanted switching signals may be generated. Mount OPTISWITCH 3000 C at a location in the vessel where no disturbing influence from e.g. filling openings, agitators etc. can occur.

Flows

To minimise flow resistance caused by the tuning fork, OPTISWITCH 3000 C should be mounted in such a way that the surfaces of the blades are parallel to the product movement.

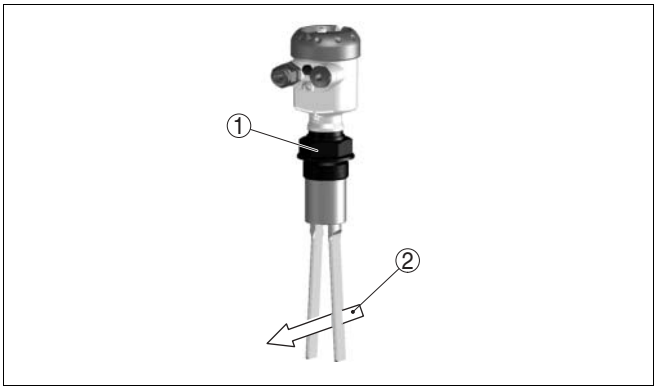

Fig. 5: Orientation of the tuning fork in case of flow
1 Marking with screwed version
2 Direction of flow

Adhesive products

In case of horizontal mounting in adhesive products, the surfaces of the tuning fork should be vertical in order to reduce buildup on the blades. On the screwed version you will find a marking on the hexagon. With this, you can check the position of the tuning fork when screwing it in. When the hexagon touches the seal, the thread can be still turned by approx. half a turn. This is sufficient to reach the recommended installation position.

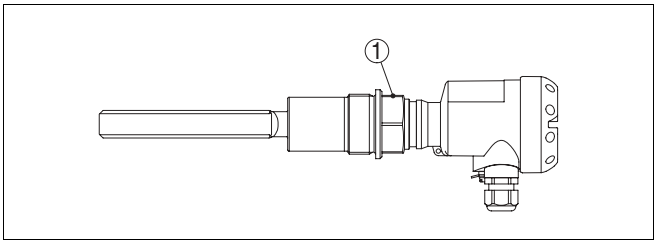

Fig. 6: Vertical installation - marking
1 Marking on top with screwed version

5 Connecting to voltage supply

5.1 Preparing the connection

Note safety instructions

Generally not the following safety instructions:

- Connect only in the complete absence of line voltage

Select power supply

Connect the power supply according to the following diagrams. Take note of the general installation regulations. As a rule, connect OPTISWITCH 3000 C to vessel ground (PA), or in case of plastic vessels, to the next ground potential. On the side of the instrument housing there is a ground terminal between the cable entries. This connection serves to drain off electrostatic charges.

The data for power supply are stated in the "Technical data" in the "Supplement".

Selecting the connection cable

OPTISWITCH 3000 C is connected with standard cable with round cross section. An outer cable diameter of 5 ... 9 mm (0.2 ... 0.35 in) ensures the seal effect of the cable gland.

If cable with a different diameter or wire cross section is used, exchange the seal or use an appropriate cable connection.

5.2 Connection steps

Proceed as follows:

1 Unscrew the housing cover
2 Loosen compression nut of the cable entry
3 Remove approx. 10 cm (4 in) of the cable mantle, strip approx. 1 cm (0.4 in) insulation from the ends of the individual wires
4 Insert the cable into the sensor through the cable entry
5 Lift the opening levers of the terminals with a screwdriver (see following illustration)
6 Insert the wire ends into the open terminals according to the wiring plan
7 Press the opening lever of the terminals downward, you will hear the terminal spring closing
8 Check the hold of the wires in the terminals by lightly pulling on them
9 Tighten the compression nut of the cable entry, the seal ring must completely encircle the cable

10 Screw the housing cover back on

The electrical connection is hence finished.

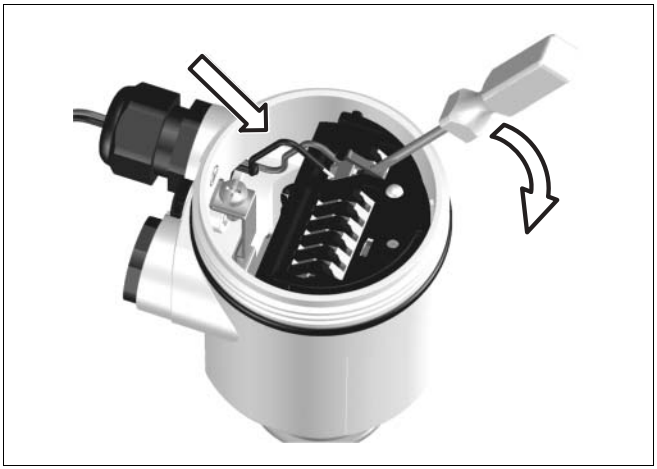

Fig. 7: Connection steps 5 and 6

5.3 Wiring plan, single chamber housing

Electronics and connection compartment

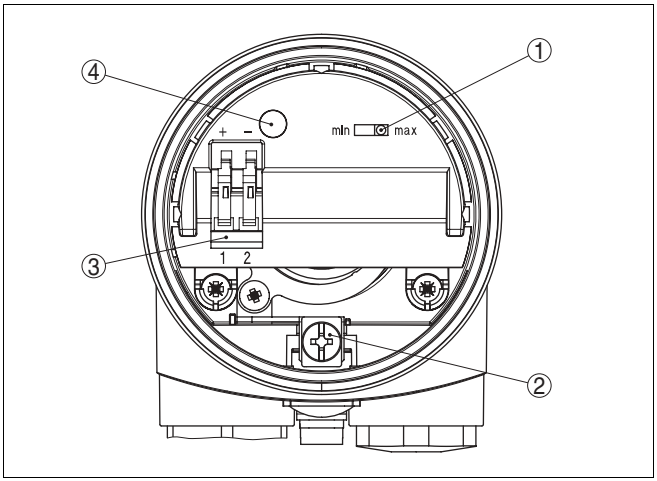

Fig. 8: Electronics and connection compartment
1 DIL switch for mode adjustment
2 Ground terminal
3 Screwed terminals
4 Control lamp

Wiring plan

For connection to a signal conditioning instrument. The sensor is powered via the connected signal conditioning instrument. For further information see the "Technical data" in the "Supplement".

The wiring example is applicable for all suitable signal conditioning instruments.

If the mode switch of OPTISWITCH 3000 C is correctly set to "max.", the control lamp on OPTISWITCH 3000 C lights.

- red - with submerged vibrating element
- green - with uncovered vibrating element

Take note of the operating instructions manual of the signal conditioning instrument. Suitable signal conditioning instruments are listed in the Technical data.

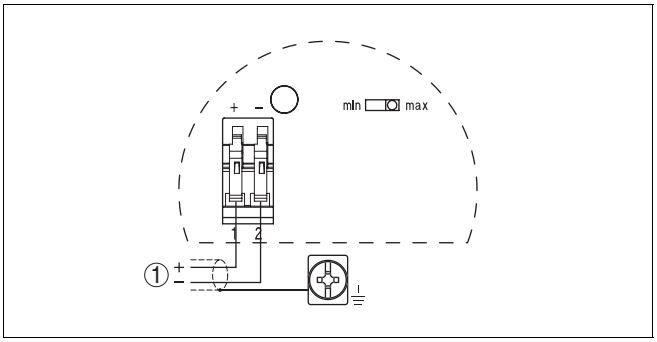

Fig. 9: Wiring plan
1 Voltage supply

6 Set up

6.1 General

The numbers in brackets refer to the following illustrations.

Function/Configuration

On the electronics module you will find the following indicating and adjustment elements:

- DIL switch for mode adjustment - min./max. (1)
- Signal lamp (4)

Note:
As a rule, always set the mode before starting the setup of OPTISWITCH 3000 C . If the instrument is used in conjunction with a signal conditioning instrument, always set the mode switch (1) on OPTISWITCH 3000 C to max. mode.

The mode is selected on the signal conditioning instrument with the mode switch.

The switching output will change if you set one of the two mode switches afterwards. This could possibly trigger other connected instruments or devices.

6.2 Adjustment elements

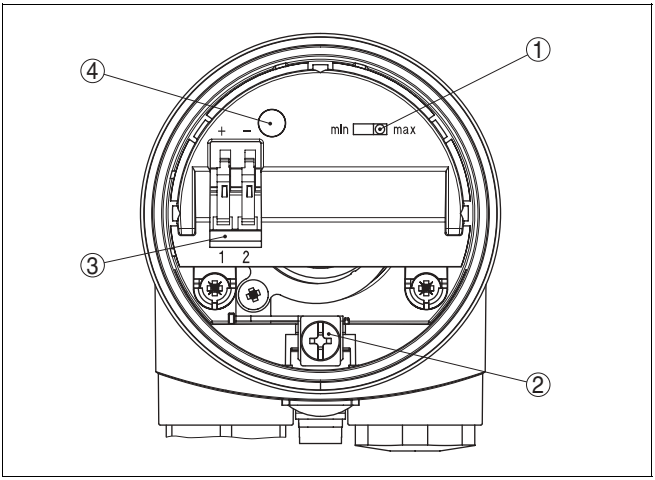

Fig. 10: Electronics module - Two-wire output
1 DIL switch for mode adjustment
2 Ground terminal
3 Screwed terminals
4 Control lamp

Mode adjustment (1)

With the mode adjustment (min./max.) you can determine the output current.

When using a signal conditioning instrument, always set the mode switch to max. mode.

In this case, you select the requested mode acc. to the "*Function chart*" (max. - max. detection or overfill protection, min. - min.detection or dry run detection) on the signal conditioning instrument.

When used on a control system, the following values apply:

- Mode min.
  - Vibrating element uncovered - 16 mA ±1 mA
  - Vibrating element covered - 8 mA ±1 mA
- Mode max.
  - Vibrating element uncovered - 8 mA ±1 mA
  - Vibrating element covered - 16 mA ±1 mA

Signal lamp (4)

Control lamp for indication of the switching condition.

- green = 8 mA
- red = 16 mA
- red (flashing) = Failure (<2.3 mA)

6.3 Function chart

OPTISWITCH 3000 C level switch

The following chart provides an overview of the switching conditions depending on the adjusted mode and level.

Mode on the sensor	Level	Signal current - Sensor	Signal lamp - sensor
max. Overfill protection		8 mA	 Green
max. Overfill protection		approx. 16 mA	 red
min. Dry run protection		approx. 8 mA	 Green
min. Dry run protection		approx. 16 mA	 red
Fault signal (min./max. mode)	any	<2.3 mA	 flashes red

OPTISWITCH 3000 C level switch with signal conditioning instrument[1)]

The following chart provides an overview of the switching conditions depending on the adjusted mode of the signal conditioning instrument and the level.

Note:

Keep in mind that the mode switch of OPTISWITCH 3000 C must be always set to "max.".

[1)] You will find suitable signal conditioning instruments under "Technical data"

Mode on the signal conditioning instrument	Level	Signal current - Sensor	Signal lamp - sensor	Signal lamp - signal conditioning instrument
Mode A Overfill protection		approx. 8 mA	☼ Green	☼
Mode A Overfill protection		approx. 16 mA	☼ red	○
Mode B Dry run protection		approx. 16 mA	☼ red	☼
Mode B Dry run protection		approx. 8 mA	☼ Green	○
Fault signal (mode A/B)	any	<2.3 mA	☼ flashes red	○

7 Maintenance and fault rectification

7.1 Maintenance

When used as directed in normal operation, OPTISWITCH 3000 C is completely maintenance free.

7.2 Rectify faults

Causes of malfunction

OPTISWITCH 3000 C offers maximum reliability. Nevertheless faults can occur during operation. These may be caused by the following, e.g.:

- Sensor
- Process
- Power supply
- Signal processing

Fault rectification

The first measure to be taken is to check the output signal. In many cases, the causes can be determined this way and the faults rectified.

Checking the switching signal

? OPTISWITCH 3000 C signals "covered" when the vibrating element is not submerged (overfill protection)

? OPTISWITCH 3000 C signals "uncovered" when the vibrating element is submerged (dry run protection)

- Supply voltage too low

→ Check the power supply

- Electronics defective

→ Press the mode switch (min./max.). If the instrument then changes the mode, the instrument may be mechanically damaged. Should the switching function in the correct mode still be faulty, return the instrument for repair.

→ Push the mode switch. If the instrument then does not change the mode, the oscillator may be defective. Exchange the oscillator.

→ Check if there is buildup on the vibrating element, and if so, remove it.

- Unfavourable installation location

→ Mount the instrument at a location in the vessel where no dead zones or mounds can form.

→ Check if the vibrating element is covered by buildup on the socket.

- Wrong mode selected

→ Set the mode switch on OPTISWITCH 3000 C to "max". Set the correct mode on the signal conditioning instrument (A: overfill protection; B: dry run protection).

? Signal lamp flashes red

- Electronics has detected a failure

→ Exchange instrument or return instrument for repair

7.3 Exchange the electronics

In general, all oscillators of series VB60 can be interchanged. If you want to use an oscillator with a different signal output, you can download the corresponding operating instructions manual from our homepage under Downloads.

Proceed as follows:

1 Switch off power supply
2 Unscrew the housing cover
3 Lift the opening levers of the terminals with a screwdriver
4 Pull the connection cables out of the terminals
5 Loosen the two screws with a Phillips screwdriver (size 1)

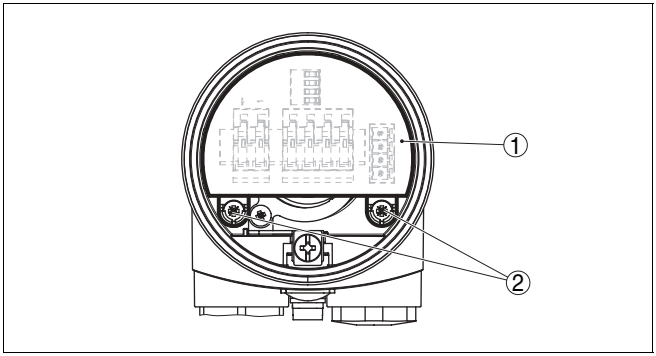

Fig. 11: Loosen the screws
1 Electronics module
2 Screws (2 pcs.)

6 Remove the old oscillator
7 Compare the new oscillator with the old one. The type label of the oscillator must correspond to that of the old oscillator.

8 Compare the settings of the two oscillators. Set the adjustment elements of the new oscillator to the same setting of the old one.

Information:
Make sure that the housing is not rotated during the electronics exchange. Otherwise the plug may be in a different position later.

9 Insert the oscillator carefully. Make sure that the plug is in the correct position.

10 Screw in and tighten the two screws with a Phillips screwdriver.

11 Insert the wire ends into the open terminals according to the wiring plan

12 Press the opening lever of the terminals downward, you will hear the terminal spring closing

13 Check the hold of the wires in the terminals by lightly pulling on them

14 Check the tightness of the cable entry. The seal ring must completely encircle the cable.

15 Screw the housing cover back on

The electronics exchange is hence terminated.

7.4 Instrument repair

If a repair is necessary, please proceed as follows:

You can download a return form from our website http://www.krohne-mar.com/fileadmin/media-lounge/PDF-Download/Specimen_e.pdf.

By doing this you help us carry out the repair quickly and without having to call back for needed information.

- Print and fill out one form per instrument
- Clean the instrument and pack it damage-proof
- Attach the completed form and possibly also a safety data sheet to the instrument

8 Dismounting

8.1 Dismounting procedure

Warning:
Before dismounting, be aware of dangerous process conditions such as e.g. pressure in the vessel, high temperatures, corrosive or toxic products etc.

Take note of chapters "*Mounting*" and "*Connecting to power supply*" and carry out the listed steps in reverse order.

8.2 Disposal

The instrument consists of materials which can be recycled by specialised recycling companies. We use recyclable materials and have designed the electronic modules to be easily separable.

WEEE directive 2002/96/EG
This instrument is not subject to the WEEE directive 2002/96/EG and the respective national laws (in Germany, e.g. ElektroG). Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points. These may be used only for privately used products according to the WEEE directive.

Correct disposal avoids negative effects to persons and environment and ensures recycling of useful raw materials.

Materials: see "*Technical data*"

If you cannot dispose of the instrument properly, please contact us about disposal methods or return.

9 Supplement

9.1 Technical data

General data

Material 316L corresponds to 1.4404 or 1.4435

Materials, wetted parts	
– Process fitting - thread	plastic PBT (Polyester)
– Process seal - Thread	Klingersil C-4400
– Tuning fork	316L
Materials, non-wetted parts	
– Housing	plastic PBT (Polyester)
– Seal ring between housing and housing cover	silicone
– Ground terminal	316L
Weight	1500 g (53 oz)
Max. lateral load	600 N (135 lbf) longitudinal to the fork side

Output variable

Output	Two-wire output
Suitable signal conditioning instrument	SU 501 Ex
Output signal	
– Mode min.	Vibrating element uncovered - 16 mA ±1 mA Vibrating element covered - 8 mA ±1 mA
– Mode max.	Vibrating element uncovered - 8 mA ±1 mA Vibrating element covered - 16 mA ±1 mA
– Fault signal	<2.3 mA
Modes (adjustable)	min./max.
Integration time	
– when immersed	approx. 0.5 s
– when laid bare	approx. 1 s

Ambient conditions

Ambient temperature on the housing	-40 … +80 °C (-40 … +176 °F)
Storage and transport temperature	-40 … +80 °C (-40 … +176 °F)

Process conditions	
Parameter	Limit level of solids
Process pressure	-1 … 6 bar/-100 … 600 kPa (-14.5 … 87 psi)
Process temperature	-50 … +100 °C (-58 … +212 °F)
Density	>0.08 g/cm³ (0.003 lbs/in³)

Electromechanical data	
Cable entry/plug[2)]	
– Single chamber housing	• 1x cable entry M20x1.5 (cable-ø 5 … 9 mm), 1x blind stopper M20x1.5 or: • 1x closing cap ½ NPT, 1x blind plug ½ NPT or: • 1x plug (depending on the version), 1x blind plug M20x1.5
Spring-loaded terminals	for wire cross-section up to 1.5 mm² (0.0023 in²)

Adjustment elements	
Mode switch	
– min.	Min. detection or dry run protection
– max.	Max. detection or overfill protection

Voltage supply	
Supply voltage	10 … 36 V DC (via the signal conditioning instrument)

Electrical protective measures	
Protection	IP 66/IP 67
Overvoltage category	III
Protection class	II

[2)] Depending on the version M12x1, according to DIN 43650, Harting, Amphenol-Tuchel, 7/8" FF.

9.2 Dimensions

OPTISWITCH 3000 C

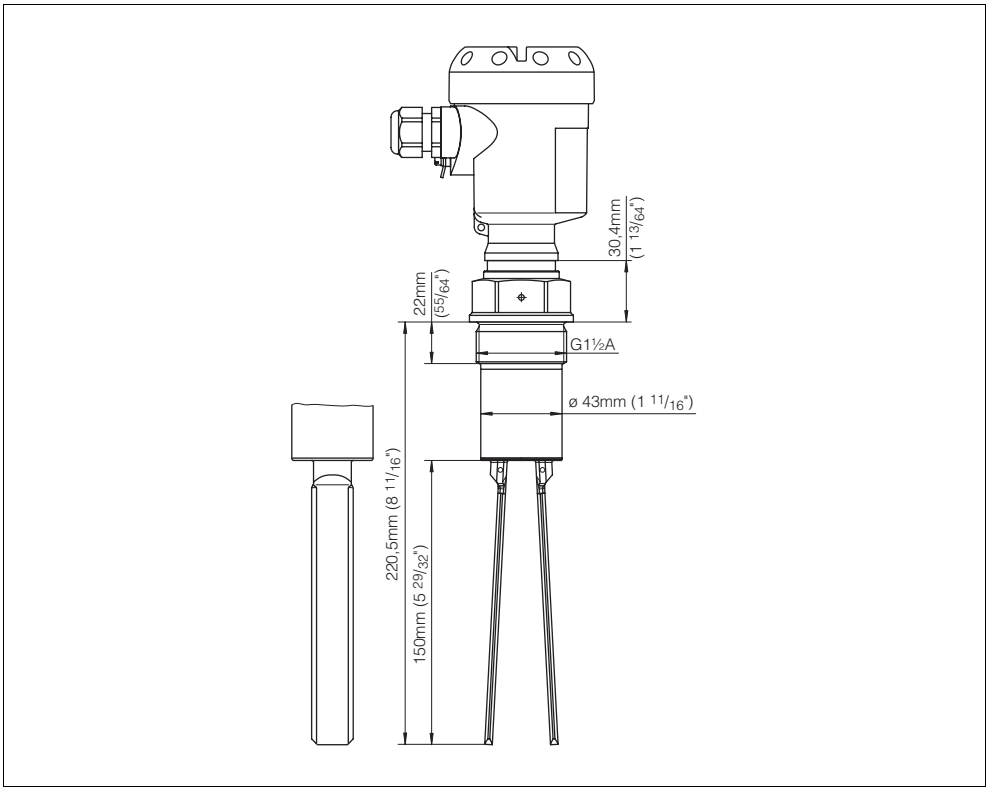

Fig. 12: OPTISWITCH 3000 C, threaded version G1½ A

9.3 Certificates

CE declarations of conformity

CE

Konformitätserklärung

Declaration of conformity
Déclaration de conformité

KROHNE

Krohne S.A.S.
Les Ors BP 98
F-26103 Romans Cedex

erklärt in alleiniger Verantwortung, daß das Produkt / declare under our sole responsibility that our product / déclare sous sa seule responsabilité que le produit

OPTISWITCH 3000 C
mit Relaisausgang / with relay output / avec sortie relais (VB60R)
mit Transistorausgang / with transistor output / avec sortie transistor (VB60T)
mit Zweileiterausgang / with two-wire output / avec sortie bifilaire (VB60Z)

auf das sich diese Erklärung bezieht, mit den folgenden Normen übereinstimmt / to which this declaration relates is in conformity with the following standards / auquel se réfère cette déclaration est conforme aux normes

Emission / Emission / Emission → EN 61326 : 1997 (Klasse B)
Immission / Susceptibility / Immission → EN 61326 : 1997 / A1 : 1998
EN 61010 – 1 : 2001

gemäß den Bestimmungen der Richtlinien / following the provision of Directives / conformément aux dispositions des Directives

73/23 EWG
89/336 EWG

03.02.2005

Florian Stengele

i.V./p.p./P.O. Florian Stengele

Fig. 13: CE declarations of conformity

Manufacturer declaration

KROHNE

Herstellererklärung 24653

Hiermit erklärt die Fa. Krohne S.A.S.
Les Ors BP 98
F-26103 Romans Cedex

dass die **Grenzschalter Typen OPTISWITCH 3000 C, 3100 C, 3200 C, 3300 C mit Zweileiterausgang**

in Übereinstimmung mit DIN/EN 60079-14/2004 Abs. 5.2.3 Punkt c 1

bei bestimmungsgemäßem Gebrauch unter der Maßgabe, dass vom Betreiber die Angaben der nachfolgend aufgeführten Dokumente eingehalten werden:

- Einbau- und Betriebshinweise der Bedienungsanleitung
- Daten und Hinweise dieser Herstellererklärung
- Einschlägige Errichtungsvorschriften

geeignet ist für den Einsatz in Zone 2

Die maximale betriebsmäßige Oberflächentemperaturerhöhung* beträgt 40K.

Bei einer Umgebungstemperatur von 70°C am Gehäuse und einer Prozesstemperatur von 70°C, beträgt die betriebsmäßig auftretende maximale Oberflächentemperatur* 110°C.

Maßnahmen zur Aufrechterhaltung des Explosionsschutzes im Betrieb:

- Diese Erklärung gilt nur, wenn das OPTISWITCH im Bereich der angegebenen elektrischen Grenzwerte betrieben wird.
- Zulässige Versorgungsspannung: 10...36V DC (über das Auswertgerät)
- Das Gerät ist so zu installieren und zu betreiben, dass Zündgefahren durch elektrostatische Aufladungen nicht zu erwarten sind (der Prozessanschluss, der kunststoffbeschichtete/ummantelte Messsondenteil bzw. das Gehäuse ist je nach Ausführungsvariante aus nicht elektrisch leitendem Kunststoff).
- Auf das Vorhandensein, die einwandfreie Beschaffenheit und den richtigen Sitz der Dichtung zwischen dem Gehäuseunterteil und dem Deckel ist zu achten; der Deckel ist fest zu verschrauben.
- Wird das Gerät mit geöffnetem Deckel betrieben, bzw. der Schalter/Potentiometer betätigt, muss gewährleistet sein, dass keine explosionsfähige Atmosphäre vorhanden ist.
- Für eine dichte und zugentlastete Kabeleinführung ist zu sorgen; der Außendurchmesser des Anschlusskabels muss der Kabelverschraubung angepasst sein; die Druckschraube der Kabelverschraubung ist sorgfältig anzuziehen.
- Nicht benutzte Öffnungen für Kabel- und Leitungseinführungen müssen dicht verschlossen sein.
- Die OPTISWITCH sind so zu errichten, dass ein Anschlagen des Sensors an die Behälterwand unter Berücksichtigung der Behältereinbauten und der Strömungsverhältnisse im Behälter mit hinreichender Sicherheit ausgeschlossen werden kann.
- Die Oberflächentemperatur darf die Zündtemperatur der betreffenden explosionsfähigen Atmosphäre nicht überschreiten.

*Einzelbauteil im Gerät

Dieses Betriebsmittel wurde durch eine Person beurteilt welche die Anforderung gemäß DIN/EN 60079-14 erfüllt.

Krohne S.A.S.
Romans Cedex, den 31.05.05

i.V. Stengele

Fig. 14: Manufacturer declaration

30061-EN-060830

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Subject to change without notice